CHAPTER I
INTRODUCTION

1.1 Background

Physics is one of the important sciences in improving the quality of human resources, in addition physics is a branch of natural science which emphasizes the provision of direct experience to develop competencies to enable students to explore and understand the concepts of physics. Basically physics as a science is interest, in which studied natural phenomena and try to reveal all the secrets of the universe and the laws that occur in our daily life. Still, learning physics is considered to be a difficult subject.

Interviews with Physics teacher Class X-1 SMA Negeri 3 Medan Sehat Anakampu said that the average value of student learning outcomes in the year 2012/2013 which is 60 while the minimum completeness criteria (KKM) learning outcomes will achieve is 70 . It can be concluded student's learning outcomes less optimal. Also said that active students are lacking when the course of study. It was seen, when the results orally at the end of learning, only a small percentage of students who raised their hands to answer questions.

The low value of the average student's learning outcomes because teachers do not use a variety of learning model. It can be concluded that during the learning process is still using lectures, notes, and work on the problems. These facts reinforce that learning is still dominated by the teacher centered, which focuses on the mastery of the learning outcomes of knowledge products aimed at students considering factual information.

One solution for this problem is to prepare student's to become good adaptive learners. That is students should be able to apply what they learn in school to the various situation in real life. Obviously, the traditional teacher as information giver, textbook guided classroom has failed to bring about desired outcome of product thinking students. An alternative is to change the focus of the classroom from teacher –centered to student-centered using a constructivist approach. With the emphasis on the learning, we see that learning is an active process occurring within and influenced by the learner as by the instructor and the

school. From this perspective, learning outcomes do not depend on what the teacher present. Rather, they are interactive result of what information is encountered and how the student process it base on perceive notion and existing personal knowledge (Kilavuz,2005:15)

Learning cycle which is an inquiry –based teaching model is useful to teacher is designing curriculum material and instructional strategies in science. The model is derived from constructivist ideas of the nature of science, developer by Robert Karplus with the Science Curriculum Improvement Study (SCIS) in 1964. The learning cycle of Karplus has three phases. These are exploration, term introduction and concept application. Over the years the learning cycle is revised and added several phases. So, 5E learning cycle is formed. It is developed by the Biological Sciences Curriculum Study (BSCS). It consists of the following phases: engagement, exploration, explanation, elaboration, and evaluation. The 5E learning cycle has been shown to be an extremely effective approach to learning (Kilavuz, 2005:15).

This is evident from several researchers who have conducted research about 5E Learning Cycle Model, including; According to Nazila Ramadhani (2011:71) in the" Influence Of Constructivism 5E on Student's Learning Outcomes in SMA Laksamana Martadinata in Academic Year 2011/2012" *(Pengaruh Model Pembelajaran Constructivism 5E Terhadap Hasil Belajar Siswa DI SMA Laksamana Martadinata T.P 2011/2012)* conducted research as quasi experimental. Researcher's research shows that using the 5E Learning Cycle Model can provide the improvement of student learning outcomes and activities , this can be seen from result student's activity increase 74.4 using 5E Learning Cycle Model and with Conventional Model Learning is result student's activity is 61.5 with active category. In addition student learning outcomes which have increased from 33.5 to 66.3 and difference effect 5E learning cycle model and conventional model of student learning outcomes is 21.26%.

According to Satria Tinambunan (2012:54) in the "Influence of Learning Cycle Model Using Mind Mapping on Student's Learning Outcomes in Dynamic Electricity in Class X Semester II SMA Swasta Parulian 1 Medan Academic Year

2011/2012 ” (*Pengaruh Model Pembelajaran Learning Cycle Berbasis Peta Konsep Terhadap Hasil Belajar Siswa Pada Materi Pokok Listrik Dinamis di Kelas X Semester II SMA Swasta Parulian 1 Medan T.P 2011/2012)*conducted research as quasi experimental method by designing with pre-test and post-test and observe how the activities of student during the learning model was applied. Researcher shows that using the learning cycle model can provide the improvement of student’s learning outcomes and activity, this can be seen from student’s learning outcomes which have increased from 40.28 to 64.42 In addition student’s learning activity higher than student less active this learning

According to Meghann A. Campbell (2012:67) in the “The Effect of The 5E Learning Cycle Model on Students’ Understanding of Force and Motion Concepts” conducted research as quasi experimental. Researcher shows that using the Learning Cycle Model can provide the improvement of student learning outcomes and activities. This can be seen from result student learning outcomes which have increased was increased as 70.3 and difference effect learning cycle model and conventional model of student learning outcomes is 14.8%.

According to Yeliz Kilavuz (2005) in the “The Effect of 5E Learning Cycle Model Based on The Constructivist Theory on Tenth Grade Student’s Understanding of Acid –Based Concept” conducted research as quasi experiment. The results showed that there was no significant difference at the beginning of treatment between the two groups in terms of achievement of acid base concepts (t=-1.134, p>00.5) and attitudes toward chemistry as school subject (t=0.015 p>0.05) before treatment. The 5E learning cycle model based instruction caused a significantly better acquisition of scientific conception related to acid-base concept than traditionally designed chemistry instruction and The pre and post test scores of Acid –Base Concept Achievement Test shows that experiment class achievement was increased. Thus, it can be concluded that the growth in understanding of acid –base concept is statically significant.

Here will conduct quasi experimental to increase student’s learning outcomes whether it from cognitive, affective, and psychomotor domains in Dynamic Electricity material and also effectiveness of 5E Learning cycle model.

Based on the above researcher are interested in conducting research entitled **"Effectiveness of 5E Learning Cycle Model in Dynamic Electricity for Tenth Grade SMA Negeri 3 Medan".**

1.2. Problem Identification

Based on the background presented above, can be identified several issues as follow:

1. Learning model that is often used direct instruction learning model
2. Lack of student involvement in teaching and learning activities
3. The low of student learning outcomes in Physics

1.3. Limitation Problem

The Limitation problems in this research are as follows:

1. The model applied in this research is 5E Learning Cycle Model
2. Learning in this research topic is Dynamic electricity
3. The research is conducted in SMA Negeri 3 Medan grade X semester 2 academic year 2012/2013.

1.4. Formulation of Problem

Limitation Based on the problem, so the problem formulation contained in this research is as follows:

1. Is there any effect difference of 5E learning cycle model and direct instruction learning model for cognitive domain on student's learning outcomes in dynamic electric
2. Is there any effect difference of 5E learning cycle and direct instruction learning model for affective and psychomotor domains on student learning outcomes in dynamic electricity?
3. How the effectiveness of 5E learning cycle on student's learning outcomes in dynamic electricity?

1.5. Objective of Research

Referring to the problem formulation, then the objectives to be achieved in this research as follows:

1. To examine the effect difference of 5E learning cycle and direct instruction learning model for cognitive domain on student's learning outcomes in dynamic electricity
2. To examine the effect difference of 5E learning cycle and direct instruction learning model for affective and psychomotor domains on student learning outcomes in dynamic electricity
3. To examine the effectiveness of 5E learning cycle on student's learning outcomes in dynamic electricity

1.6. Benefits of Research

The benefit of this research as follows:

1. For School: it can provide good information and donations in order to improve the learning process through Increased quality school student's achievement and professionalism of teachers working
2. For Teacher: for consideration in selecting or integrating a variety of appropriate learning model class, especially in physics learning.
3. For Students: students are more motivated and continue to be active during the learning process takes place, so it can improve learning outcomes and provide a fun learning experience
4. Researcher: As an input and increase of knowledge for the researcher as a candidate for future teacher in the implementation of 5E learning cycle model